

**Energy Research and Development Division
FINAL PROJECT REPORT**

STRATEGIC ACTION PLAN

**South Lake Tahoe and Eastern Alpine
County Areas Renewable Energy
Regional Exploration Study**

Prepared for: California Energy Commission
Prepared by: South Tahoe Public Utility District



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PREFACE

The California Energy Commission Energy Research and Development Division supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

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ABSTRACT

The Renewable Energy Regional Exploration Study built local community interest, support, and commitment to install community-scale distributed renewable energy and grid integration technologies in the environmentally sensitive South Lake Tahoe and eastern Alpine County areas. The goal was to expand renewable energy opportunities and explore coordination among water and electric utility operations with multiple community stakeholders in the broader regional community service areas. The study demonstrated a coordinated community effort towards establishing a local level regional energy plan. The Strategic Action Plan resulted in 22 projects with a high level of interest in project development from 12 different community hosts/proponents. The projects suggested were four hydroelectric/electric grid load-shifting and balancing projects, 12 solar projects, and six combined heat and power projects. Technologies used included pumped hydroelectric energy storage, battery storage, and combined heat and power using microturbine technology. There are various options available to offset the cost of project implementation, including incentive programs, foundation support, financing options, and grant solicitations.

Keywords: South Lake Tahoe, South Tahoe Public Utility District, renewable energy, enabling technology, implementation strategies, strategic action plan, funding opportunities

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EXECUTIVE SUMMARY

Introduction

The Renewable Energy Regional Exploration Study was a coordinated community effort to locally establish a regional energy plan. The study endeavored to build local community interest, support, and commitment to install community-scale distributed renewable energy and grid integration technologies in the environmentally sensitive South Lake Tahoe and eastern Alpine County areas. This study expanded renewable energy opportunities and explored coordination among water and electric utility operations with multiple community stakeholders in the broader regional community service areas. This final report outlines the Strategic Action Plan's (SAP) methods for implementing projects identified in the Resource and Technology Feasibility Report.

Project Purpose and Process

The study developed and integrated intermittent energy sources such as wind and solar into the South Lake Tahoe and eastern Alpine County communities. The South Tahoe Public Utility District (STPUD) and Liberty Utilities teamed with community stakeholders to explore the potential value and plan the future application of other renewable energy sources and enabling technologies to balance on and off-peak loads and firm up intermittent sources of renewable energy.

The Resource and Technology Feasibility Study Report describes 22 projects from 12 different community hosts/proponents, all of which have a high level of interest in project development. The study identified ways to:

- Develop a model partnership agreement, standardized technology evaluation criteria, and replicable process that can be tested in a multi-jurisdictional setting for creating a comprehensive community plan for expansion, operation, and integration of renewable energy at the distribution grid level in environmentally sensitive communities.
- Explore the capability of coordinating energy loads, resources of water, and other community infrastructure systems with utility distribution grid operations using advanced communications and control technologies among stakeholders that have historically operated their systems independently.
- Develop a strategic renewable energy plan for the STPUD/Liberty Utilities region that illustrates the opportunities that exist throughout California where topography and existing infrastructure offer opportunities for renewable energy development and partnerships.

Project Results

The overall study brought together a variety of partners to share ideas, information, and project support. Each partner contributed in a different way, bringing forth individual projects that amount to a greater use of renewable energy in the South Lake Tahoe and eastern Alpine County areas. Implementing these projects will help the community achieve their overarching

vision towards a progressive, renewable energy community. Furthermore, implementing this SAP could contribute to the Lake Tahoe Sustainable Communities Program.

Successful projects will reflect desired regulatory, policy, and sustainability goals of the regional stakeholders and community leaders, helping advance the community towards energy security. With renewable energy being supported statewide and regionally through several policy and legislative initiatives, there has been an increase in funding opportunities available for renewable energy and enabling technology projects. These projects can be implemented through incentive programs, foundation support, financing options and grant solicitations. Stakeholders should assess the project funding opportunities outlined in this plan to identify a pathway to project implementation. Various collaboration and joint venture opportunities could be pursued as well.

Project Benefits

Benefits include cost reduction and reduced environmental impacts to electricity rate payers, improved reliability to the Liberty Utilities grid, establishment of renewable energy policies associated with the regional schools, and identification and future development of unique water system/electrical grid integrating concepts that support the Tahoe Regional Planning Agency's "environmental Redevelopment" focus. The results will directly contribute to the carbon reduction goals of AB 32, the California RPS, the Renewable Electricity Standard (RES), and Executive Order S-06-06 addressing biomass to electricity goals. Information developed in this project can be transferred to other California mountain and rural communities.

CHAPTER 1:

Introduction

1.1 Background

This task outlined strategies for implementing projects identified in the Resource and Technology Feasibility Report as part of the Renewable Energy Regional Exploration Study (Study). As part of this overall Study, partner and community stakeholders developed an energy goal for the region which will help guide and prioritize this process.

Energy Goal: Develop a Renewable Energy and SAP through collaborative efforts between partners that meets California and regional adopted policies, targets, and timelines to become more energy efficient and secure and reduce carbon emissions, while maintaining and enhancing overall environmental quality, sustainability, and economic opportunities.

With the Governor's 50 percent renewables standard by 2030, it will be an ambitious 15 years for the state of California. As Governor Brown explained, there will be a wide range of initiatives in order to meet this goal, several of which have been explored in this study; including: more distributed generation, expanded rooftop solar, battery storage, and the full integration of information technology and electrical distribution. This will require substantial investments that could excel many of the projects developed in this Study. This will also require policy direction and willingness to deviate from established norms by the regional electric service provider (Liberty Utilities).

CHAPTER 2:

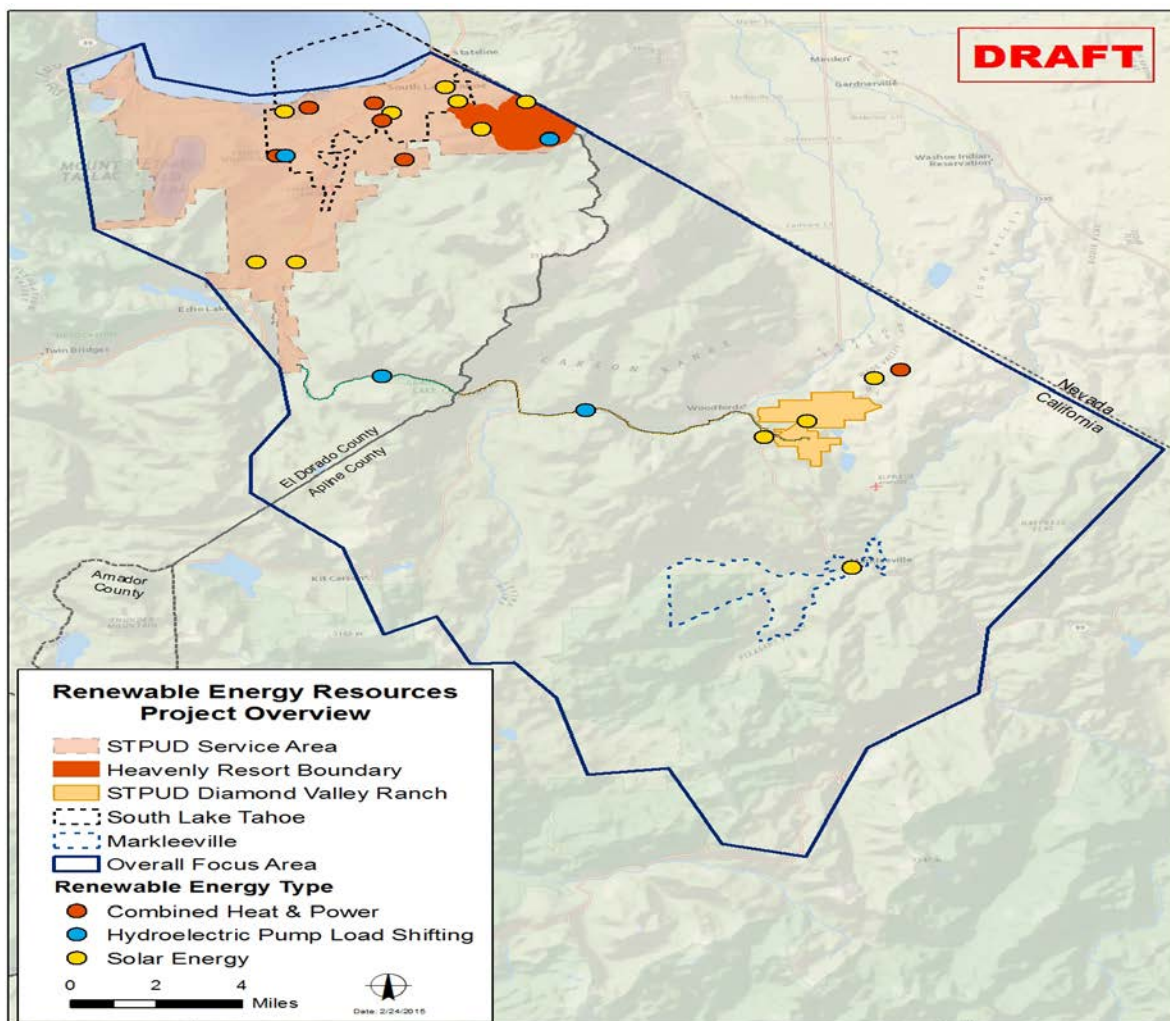
Planning Group

Convening a planning group was the first step to develop a comprehensive SAP through community stakeholder and project partner collaboration. Project partners and community stakeholders [through the existing Energy, Water, and Waste Efficiency (EWWE) workgroup , a subgroup of the grass roots-based Lake Tahoe Sustainability Collaborative (LTSC)], participated in several online forums to exchange ideas and to provide comments on the development and possible strategies for future renewable energy and enabling technology project implementation. The project partners met on February 9, 2015 to review the SAP and build momentum to begin pursuing implementation measures. A list of planning group members and a project meeting schedule is provided in Appendix A.

CHAPTER 3: Projects

The Resource and Technology Feasibility Study Report describes 22 projects from 12 different community hosts/proponents, all of which have a high level of interest in project development (Figure 1). These projects can be broken down into three general resource categories with a total of four hydroelectric/electric grid load shifting and balancing projects (Table 1), 12 solar projects (Table 2), and six Combined Heat and Power (CHP) projects (Table 3) that have the potential to use biodiesel, a California qualified renewable energy source. The enabling technologies accompanying these projects include Pumped Hydroelectric Energy Storage (PHES), battery storage, and CHP using microturbine technology.

Figure 1: Renewable Energy Resources and Enabling Technology Projects Overview Map



Source: EN2 Resources, Inc.

Table 1: Hydroelectric/Load Shifting & Balancing Project List

Stakeholder Lead	Project Name	Capacity	Potential Annual Generation
STPUD*	C-Line Small Hydroelectric Generation	1,060 kW	5,300 MWh/yr
Vail Resorts Inc. Heavenly*	CA Dam to Sky Ridge Pumped Hydro and Electric Grid Balancing Support	410 kW	1,800 MWh/yr
Lukins Brothers Water Co.	Gardner Mountain Pumped Storage for Electric Grid Load Shifting	500,000 gallons	173 MWh/yr
STPUD	Load Shifting for A and B Lines	2.5 MG Tank	7,233 MWh/yr
Totals		1,470 kW	14,506 MWh/yr

* Other options not represented here

Table 2: Solar Energy Project List

Stakeholder Lead	Project Name	Capacity	Potential Annual Generation
STPUD	Diamond Valley Ranch Solar Project	1 MW	2,300 MWh/yr
Alpine County Community Services Department	Solar Project at Woodfords	1 MW	1,900 MWh/yr
Washoe Tribe of California	Washoe Tribe Solar Project at Hung A Lel Ti Community.	260 kW	618 MWh/yr
Lake Tahoe Community College	Solar at Community Soccer Field	250 kW	595 MWh/yr
Vail Resorts Inc. Heavenly	Rooftop Solar at Gondola Terminal, California Lodge, and Lakeview Lodge	100 kW	200 MWh/yr
Lake Tahoe Unified School District	Lake Tahoe Environmental Science Magnet School	90 kW	214 MWh/yr
Tahoe Transportation District	Solar at Transportation Hub on Transit Way	30 kW	71 MWh/yr
Meyers Community Advisory Council	Lira's Market Parking Lot Solar Array	30 kW	59 MWh/yr
Markleeville PUD	Markleeville PUD Solar Project	30 kW	59 MWh/yr
Tahoe Keys Property Owners Association	In-Door Recreation Center Solar Project	20 kW	25 MWh/yr
Totals		4.61 MW	6,041 MWh/yr

* Other options not represented here

Table 3: Combined Heat and Power/Biodiesel Project List

Stakeholder Lead	Project Name	Capacity	Potential Annual Generation
Lake Tahoe Community College	CHP Microturbine at New Maintenance Storage Building (Thermal Load for Sidewalk Snow/Ice Melt)	195 kW	888 MWh/yr
*Tahoe Keys Property Owners Association	CHP Microturbine at Recreation Center	130 kW	780 MWh/yr
Lake Tahoe Unified School District	South Tahoe Middle School Boiler Replacement with CHP	65 kW	306 MWh/yr
Lake Tahoe Unified School District	South Tahoe High School Boiler Retrofit with CHP (Thermal Load for Sidewalk Snow/Ice Melt)	30 kW	190 MWh/yr
Lake Tahoe Unified School District	Sierra House Elementary School Boiler Replacement with CHP	30 kW	103 MWh/yr
Washoe Tribe of California	Community Recreation Center Biodiesel Microturbine CHP Project with Heat Exchanger	30 kW	112 MWh/yr
Totals		480 kW	2,379 MWh/yr

* Other options not represented here

CHAPTER 4:

Implementation Action Items

4.1 Strategic Goals

The Action Plan Matrix (Table 4) outlines three strategic goals necessary to successfully implement projects. Each strategic goal has strategies for meeting the goal, an objective to help guide the process, a list of responsible parties who will move the goal forward, and a suggested timeline.

Table 4: Action Plan Matrix

Strategic Goal	Strategy	Objective	Responsibility	Timeline
1. Engage in a collaborative process to oversee implementation progress of priority projects	1.1 Continue involvement with the EWWE working group	1.1.1 Formal Buy-in from the EWWE to adopt implementation strategy 1.1.2 Solicit EWWE involvement from Study stakeholders	EWWE committee members	2015
	1.2 Develop project implementation review process	1.2.1 Develop review schedule 1.2.2 Develop action steps	EWWE committee members	2015
2. Identify and track funding opportunities	2.1 Generate master list of funding opportunities	2.1.1 Funding Opportunities List	Renewable Energy Regional Exploration Study participants	2014
	2.2 Update list as necessary	2.2.1 Annually updated document	Renewable Energy Regional Exploration Study participants	On-going
3. Pursue funding opportunities for priority projects	3.1 Identify project specific opportunities using master list	3.1.1 Identify the best funding opportunity to pursue 3.1.2 Develop timeline for application submittal 3.1.3 Develop application	Project Proponent	2015 - 2020

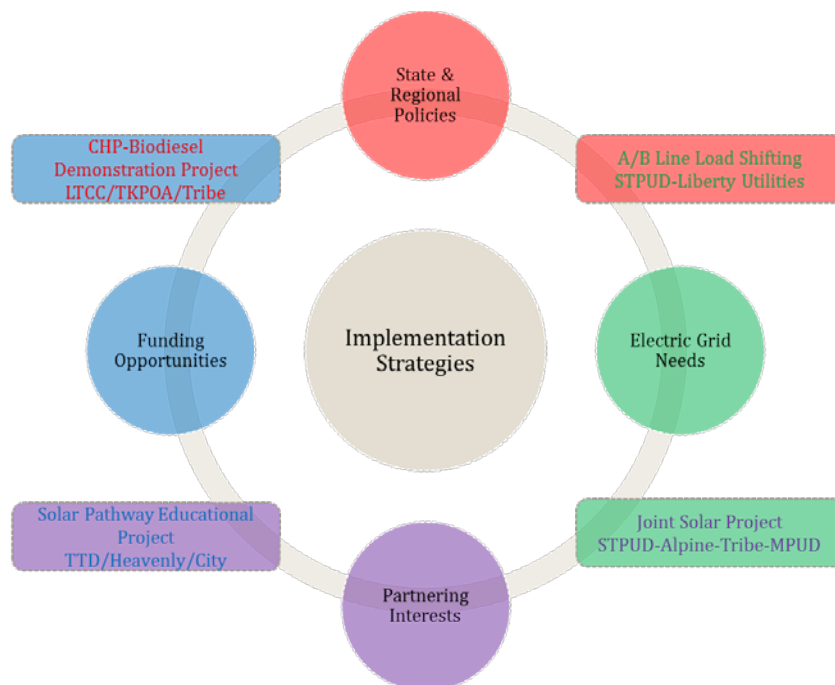
4.2 Project Implementation Strategies

There are various options available to potentially offset the cost of project implementation for the projects listed. Figure 2 illustrates the implementation strategies considered along with a few project concepts that utilize these strategies. Project stakeholders can foster partnerships with agencies/organizations with similar project interests and/or seek local support and sponsorship. The overall Study has brought together a broad set of partners to catalyze a forum for ideas, information, and project support. Without these partners, the overarching vision towards a renewable energy progressive community would be unattainable. Each partner contributes in a different way bringing forth individual projects that amount to a greater use of renewable energy in the South Lake Tahoe and Eastern Alpine County areas. All of the partners share a collective purpose of enabling people with great ideas for improving their communities and the world at large to get the support they need to make them happen.

The extent to which the projects can improve dependability of the grid (whether or not the generated energy is dispatchable) and the ability for peak grid load reduction to support electric grid needs and Liberty Utilities customer demands will be favorable for implementation through negotiations with the energy supplier.

Successful projects will reflect desired regulatory, policy and sustainability goals of the regional stakeholders and community leaders. Projects thus can help meet these goals and advance a community to become energy secure. For the reader's background and reference, programs with existing policies, goals, and targets were compiled along with existing laws and regulations that are particularly relevant to renewable energy development in the Study focus area today. These are further described in Appendix B.

Figure 2: Implementation Strategies for Selected Projects



List of Regional Programs Containing Policies, Goals, and Targets Addressing Renewable Energy:

- Tahoe Regional Planning Agency Regional Plan Update 2012
- Lake Tahoe Sustainability Collaborative
- Lake Tahoe Sustainable Communities Program
- Lake Tahoe Sustainability Action Plan 2014
- Tahoe Prosperity Center, Lake Tahoe Basin Prosperity Plan 2010
- Forest Service Strategic Energy Framework (January 2011)
- California State Parks, Strategic Action Plan (March 2013)
- US Department of the Interior, Bureau of Land Management
- El Dorado County Hydro Advisory Panel (HAP)

Existing Laws, Regulations, and Policies Applicable to Renewable Energy in the Region:

- AB 1969 - Renewable Portfolio Standards
- California AB 32 Global Warming Solutions Act of 2006
- California SB 1368 Emission Performance Standards
- Executive Order S-3-05 - Governor directive to reduce California Greenhouse Gas (GHG) emissions to 80 percent below 1990 levels by 2050
- Governor's Clean Energy Jobs Program (Distributed Side)
- California Energy Commission *Integrated Energy Policy Report*
- AB 1014 and SB 43 - Renewable Energy Self-Generation Program
- California AB 3250 Solar Rights Act 1978
- Federal Business Energy Investment Tax Credit (ITC)
- California Solar Initiative (CSI)
- California AB 1207 - Small Wind Energy Systems 2001
- El Dorado County Ordinance No. 4954 – Wind Energy Conversion Systems 2010
- CEQA Guidelines Section 15328 - Small Hydroelectric Categorical Exemption
- FERC Small Hydro and "In-Conduit" Exemptions
- The Hydropower Regulatory Efficiency Act of 2013

- The Bureau of Reclamation (BOR) Small Conduit Hydropower Development and Rural Jobs Act
- Public Law 110-140 Energy Independence and Security Act of 2007
- Executive Order B-16-2012 - Zero-Emission Vehicles

4.3 Funding and Financing Opportunities

With renewable energy being supported statewide and regionally through several policy and legislative initiatives, there has been an increase in the amount and type of funding opportunities available for renewable energy and enabling technology projects including incentive programs, foundation support, financing options and grant solicitations. Communicating with local/regional district representatives can assist in bringing dedicated funds to the area and help focus informed policy makers of the priorities being developed at a regional and local level. The funding opportunities visual tracking spreadsheet lists the different incentives, policies, foundations, financing, and grant program options available for renewable energy and enabling technology type projects (Appendix C). Many of the incentives in the spreadsheet as well as any new incentives can be found on the Database of State Incentives for Renewables and Efficiency website¹.

There are numerous third-party financing options for solar installations including the U.S. Environmental Protection Agency's (EPA) Green Power Partnership, which is dedicated to connecting communities with the tools available to access green energy. The EPA Green Power Partnership website² provides a complete list of financing options per state.

The California Energy Commission maintains an overall renewable energy program³, which contains grant programs specifically designed to assist the implementation of renewable energy projects. The U.S. Department of Agriculture (USDA) Rural Energy for America Program (REAP) offers renewable energy systems & energy efficiency improvement loans & grants to agricultural producers and rural small businesses to purchase or install renewable energy systems or make energy efficiency improvements. USDA REAP accepts applications year-round and is a good fit for the small rural focus area of South Lake Tahoe and eastern Alpine county. The California Clean Energy Jobs Act (Proposition 39) is focused on providing assistance to local educational agencies while the Electric Program Investment Charge Program focuses on research, demonstration, and deployment projects specifically benefitting ratepayers. While there are several grant opportunities providing financial support, there are assistance programs offered through the U.S. Department of Energy (DOE), the Energy Commission and Biomass Working Group, which provide technical assistance during the planning and implementation phases and helps project proponents overcome general barriers.

¹ <http://www.dsireusa.org/incentives/index.cfm?re=0&ee=0&spv=0&st=0&srp=1&state=CA>

² <http://www.epa.gov/greenpower/index.htm>

³ http://www.energy.ca.gov/renewables/renewable_links.html

4.4 Resource Specific Opportunities

4.4.1 Solar

California has abundant solar resources that can be used to help meet local, regional, and state goals for the increased use of renewable resources. The state has a comprehensive incentive program available to both individuals and businesses. The Energy Commission and the California Public Utilities Commission (CPUC) are invested in a joint campaign, Go Solar California! and the California Solar Initiative, to encourage Californians to install 3,000 megawatts of solar energy systems on homes and businesses by the end of 2016 and to install 585 million therms of gas-displacing solar hot water systems by the end of 2017. The Go Solar California program provides solar programs, rebates, tax credits, and information on installing and interconnecting solar electric and solar thermal systems. The website⁴ has information on program rules, including eligible equipment and standards, as well as information on how to find an eligible, licensed solar contractor. In addition to state programs, there a number of private companies providing financing options for solar projects as discussed in section 2, project implementation strategies.

4.4.2 In-Conduit Hydroelectric

There have been recent regulatory and technological changes that make the generation of renewable energy from small hydroelectric turbines and generators more feasible. The Feed-in Tariff, using the Renewable Energy Market Adjusting Tariff (ReMAT) or the Local Government Renewable Energy System, Bill Credit Transfer (RES-BCT) tariff are applicable for these projects, a Feed-in Tariff agreement must be reached with Liberty Utilities.

There are a few grant opportunities for hydroelectric projects, most notably from the California Department of Water Resources (DWR) and from the BOR. The DWR Water-Energy Grant Program provides funds to implement water efficiency programs or projects that reduce greenhouse gas emissions, and reduce water and energy use. The funding for this program was approved by the Governor on March 1, 2014 through Senate Bill 103, Section 11, which appropriated funds from the GHG Reduction Fund to the DWR to establish a grant program.

The BOR WaterSMART Program focuses on improving water conservation, sustainability and helping water resource managers make sound decisions about water use. It identifies strategies to ensure that this and future generations will have sufficient supplies of clean water for drinking, economic activities, recreation and ecosystem health. The program also identifies adaptive measures to address climate change and its impact on future water demands. Since 2009, about \$134 million in Federal funding for WaterSMART Water and Energy Efficiency Grants has been leveraged with approximately \$290 million in non-Federal cost share to implement more than \$420 million in water management improvements across the West.

Regionally, there is significant potential for in-conduit hydroelectric generation, as well as small scale pumped storage systems that would utilize off-peak, low cost surplus energy to pump water uphill to storage and then release that stored water to concentrate generation during on-

⁴ <http://www.calsolarresearch.ca.gov/>

peak grid hours. Especially unique to the Lake Tahoe and only a few other high alpine lakes in California (e.g., Big Bear Lake in San Bernardino County) is that all sewage effluent is treated and then pumped daily out of the lake's watershed into adjacent valleys, dropping thousands of feet in elevation to agricultural operations that grow livestock crops. Currently, none of those gravity flow systems captures the hydroelectric potential of the gravity flows, but could be retrofitted to install in-conduit systems. In the Lake Tahoe Basin today, there are 4 major export pumping operations that use significant energy to export the treated effluent. Three of these (STPUD, Incline General Improvement District (GID), and Kingsbury GID) must replace pipeline infrastructure in the near-term, presenting an opportunity to generate substantial amounts of renewable energy with existing operations.

4.4.3 Combined Heat and Power

Combined Heat and Power (CHP) projects can generate reliable, resilient, and secure power. To fully take advantage of CHP there must be changes in the permitting process and overall regulations for CHP to encourage integration and keep costs down. In addition, technology must evolve further to allow for using alternative fuel sources, combined cooling, heating and power and CO₂ capture. CHP has the potential to lower energy costs by reducing demand and avoiding transmission and distribution charges. In this study area, CHP projects based on biofuels must be added to the list of Liberty Utilities' qualified renewable energy projects for proponents to be able to take advantage of net energy metering operations.

4.4.4 Geothermal

Geothermal heat pumps can result in significant energy efficiency gains over conventional building space conditioning and domestic hot water, and have proven to work well with other renewable resource applications such as photovoltaic systems and solar hot water (CEC 2013a). The Energy Commission supports the proper design and installation of geothermal heat pump technologies as a strategy for meeting California's energy efficiency goals. To advance the design, installation, and permitting of geothermal heat pump and ground loop technologies, the Energy Commission plans to work with the geothermal heat pump industry to: propose protocols for the proper design, installation, site verification, and commissioning of geothermal heat pump ground loop systems and also collaborate with federal, state, and local agencies to resolve permitting issues (CEC 2013b).

The Geothermal Grant and Loan Program promotes developing new or existing geothermal resources and technologies. The Energy Commission makes awards through competitive solicitations. Eligible private entities and local jurisdictions can qualify for financial assistance for a wide variety of geothermal-related projects, including geothermal technology research; resource assessment, exploration and development; local and regional planning; and impact mitigation projects.

4.4.5 Alternative Fuels

In September 2013, the California Legislature reauthorized the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) extending program funding through January 1, 2024 (CEC 2013b). The Energy Commission's ARFVTP invests in developing and deploying alternative and renewable fuels and advanced transportation technologies to help meet the

state's goals for reducing greenhouse gas emissions and petroleum dependence in the transportation sector. Biodiesel is locally produced and could be available as a qualified renewable energy fuel for the identified CHP projects, as well as several regional diesel-powered vehicle fleets such as STPUD, the regional public (bus) transportation system, and the Lake Tahoe Unified School District (LTUSD).

4.4.6 Energy Storage

Numerous policy and planning documents at the state and federal level have cited the importance of evaluating the potential benefits of energy storage in the generation, transmission, and distribution equation. There are significant challenges that must be solved to achieve desired storage goals including: finding appropriate sites for these facilities, obtaining necessary permits from various agencies and levels of government, overcoming regulatory hurdles associated with environmental review, meeting high capital costs for construction, and addressing a lack of access to transmission lines (Andris 2011). Policies should be developed and implemented to eliminate barriers to energy storage deployment that prevent cost-effective deployment. In addition, research, development and demonstration funding needs to be promoted and continued.

A unique opportunity for energy storage in the study area includes integrating 'water as potential energy' storage tanks, typically in the 1 to 3 million gallon size range. Such tanks could be used to shift pumping loads, concentrate small hydro generation during the peak electric grid demand periods, and serve as sources of gravity fire suppression flows when catastrophic fires (e.g., Angora Fire) cause electric grid outages that diminish firefighting capacity.

4.4.7 Bioenergy

California is one of the leading states in biomass with 30 operational and several planned solid fuel systems including one located in Truckee (UCD Biomass Collaborative 2013). These systems use a range of fuel and have a combined capacity of 640 MW.

There are federal programs that offer financial aid to individuals and companies that harvest and deliver forest and agricultural biomass to energy facilities. The Biomass Crop Assistance Program was ready to start accepting applications on June 16, 2014, and \$25 million per year has been authorized for the program, with half of that allocated to biomass transportation costs. The US Department of Energy and the US Department of Agriculture collaborated to create the Research and Development: Initiative which provides federal funding to biomass feedstock development, as well as biofuel development. The Energy Commission, coordinating with the CPUC, is providing funding to biomass facilities in California under EPIC (Electricity Program Investment Charge). EPIC is authorized to distribute \$162 million per year, with 80% administered by the Energy Commission and 20% administered by the utilities (Weston 2014).

There are also many programs that, despite not providing direct funding for biomass, make usable biomass readily available through hazardous fuel reductions. For example, the Bureau of Indian Affairs works with the Department of the Interior on hazardous fuels reduction activities. The main activities are prescribed burning and mechanical treatment, which can

produce biomass to be used for energy. The California Conservation Corps spent nearly \$1.5 million during the 2012-2013 year in fire prevention activities, many of which likely produce substantial biomass resources. There are options already available which could make biomass energy more economically feasible (Weston 2014).

As stated in the preliminary screening for this Study, the most abundant biomass fuel source in the region is forest residuals. Further research on forest residuals shows that there is a practically available biomass of approximately 26,068 Bone Dry Tons per Year (BDT/yr) and after taking into consideration the various competing markets for the resource an estimated 7,568 BDT/yr is still available (TSS 2010). When this is added to the unique resource of aquatic biomass from the Tahoe Keys (roughly 4,000 to 5,000 wet tons per year) and the availability of urban biomass (roughly 153tons/yr), there is a possible 14,290 tons/yr of biomass that could be used for heating, power, or combined heat and power using small scale combustion systems.

Although there is a biomass plant under development in North Tahoe, there are no plans to build a plant in the South Tahoe region, despite a significant amount of fuel. Furthermore, the North Tahoe plant does not have plans to harvest any biomass from the South Lake Tahoe region. Additionally, the closest biomass plant other than the North Tahoe plant is located 70 miles away in Wilseyville. Therefore, there is no substantial competition that would interfere with harvesting of forest residue from the South Lake Tahoe area (Weston 2014).

Preliminary research of small scale biomass combustion systems show two possible candidates. AgriPower, Inc. (AESI) offers portable, modular biomass systems that are easily transported by semi-truck trailers. AESI also offers modular systems that can be deployed and redeployed if necessary. Both systems will require a structure to shield the equipment from weather which needs to be taken into consideration when conducting a detailed feasibility analysis.

AgriPower, Inc. offers portable modular systems that range from 125 kW to 2.2 MW power ratings. These designs are customized to the client's needs and can be ready for deployment in six to nine months. A 1 MW system would use approximately 16,425 tons/yr of biomass (based on 24hr operation) and has a net output of approximately 940 kW. The advantages of the AgriPower system are its high mobility and the range of materials that can be used including forest residuals, green waste, construction and demolition debris, agricultural waste, animal manure, and some forms of plastic. Its ability to be transported easily means that it can be moved to be within a short distance of sites where fuel is available including portions of forest that are being targeted for fuel reduction or have been affected by forest fires.

AESI offers modular systems that range from 348 kW to 5,800 kW of energy output. These modular systems can be fitted with several different types of power generating turbines and can be redeployed if necessary with no required repairs. The advantages of the AESI system are lower fuel requirements and lower emissions. The Biotec100 has a thermal output of 1,162kJ/s and uses 2,928 tons/yr of fuel and the highest output system that produces over 5,000 kJ/s uses just over 14,000 tons/yr of fuel. The process used in these systems is gasification instead of direct combustion which offers higher efficiency and lowers the amount of emissions produced.

A study by Stockholm Environment Institute from 2010 lists net CO₂ emissions as (0.58 tonCO₂e/bdt), while other net emissions were at or below zero.

CHAPTER 5:

Project Concepts

5.1 Joint Solar Project

Several stakeholders have expressed interest in collaborating on a singular solar project in the Eastern Alpine county area. STPUD, Alpine County Community Services Department, Washoe Tribe and Markleeville Public Utility District all have the capacity to develop solar energy projects ranging from 1MW to as low as 30kW. If these resources were pooled together at one joint location project costs would decrease, potential energy capture would be sufficient for all parties and the possibility of incorporating battery storage into the project design is more feasible, cost-wise. Proximity to the energy usage/generation, economies of scale and the positive expressions of collaborative interests make this a viable option.

A joint solar project would take advantage of partnering opportunities and potential for grid support as its implementation strategies. These implementation strategies would increase chances for grant support and foster cooperation with Liberty Utilities.

Benefits include:

- Energy reliability
- GHG reduction
- Energy cost savings
- Enabling technology (battery storage)

5.2 CHP/Biodiesel Demonstration Project

All of the CHP projects developed in the Feasibility Study have the potential to utilize biodiesel as a renewable energy fuel including projects developed for the Washoe Tribe, Lake Tahoe Community College, Tahoe Keys Property Owners Association (TKPOA), and the LTUSD. Bently Enterprises reports that its biodiesel meets California criteria as a qualified renewable energy fuel, and that fuel consistency is sufficient to maintain reliable CHP system operations. There are a few items that should be established and require verification before wide-spread use is accepted. Both fuel intake design modifications and testing of the Capstone microturbine CHP systems with Bently Enterprises' biodiesel fuel are needed to demonstrate the reliability of this combination of technology and fuel as a source of renewable energy for the Lake Tahoe region. In addition, the infrastructure needed to provide a reliable supply of biodiesel to the area would need to be developed. Prior evaluations of biodiesel infrastructure were pursued by the Tahoe Transportation District and Bently Enterprises. Both entities could be potential infrastructure partners for project proponents willing to engage in a demonstration project.

The fact that biodiesel is a Renewables Portfolio Standard (RPS) approved renewable energy source that could be used to help achieve the goal of 33 percent renewables by 2020, might look favorable as a viable project option to Liberty Utilities. The Energy Commission supports using

alternative fuels through the Alternative Fuels Grant Program which could support a demonstration project through competitive grant funds. The program will help to develop and improve alternative and renewable low-carbon fuels, optimize alternative and renewable fuels for existing and developing engine technologies, expand fuel infrastructure, fueling stations, and equipment and expand infrastructure connected with existing fleets, public transit, and transportation corridors.

Benefits include:

- Energy reliability
- Enabling technology (CHP microturbine)
- Tahoe Region-wide applications/benefits

5.3 Solar Pathway Education Project

Solar energy projects were consistently supported and preferred by project proponents due to the overall cost to install, reliable technology and public awareness component. The Tahoe Transportation District (TTD) and Heavenly Ski Resort both have potential solar projects in close vicinity, in or near Heavenly Village. With public awareness and support being an important factor for these projects, TTD and Heavenly could partner along with the City of South Lake Tahoe (City) to develop a “Solar Pathway” between these two projects. In addition to the solar arrays planned for TTD and Heavenly the City could develop additional solar arrays that are visible to the public either on existing Heavenly Village buildings or kiosks. Along this solar pathway kiosks could be developed that display the solar projects in the area and its benefits to the City, TTD, Heavenly and local businesses.

The California Solar Initiative provides grant funding and informational webinars to help with the development and funding of solar projects. The Energy Commission also provides funding for renewable energy projects especially projects with wide-spread community support and multiple partners such as the ones developed in this Study.

Benefits include:

- Energy cost savings
- GHG reduction
- Public education

5.4 Grid Load Shifting/Balancing Hydroelectric Projects

Benefits include:

- Electric grid efficiency improvements
- Energy and demand cost savings
- Water/electricity supply reliability

- Fire suppression
- Infrastructure cost deferment

CHAPTER 6:

Conclusion

6.1 Next Steps

6.1.1 Community Implementation Stages

Stakeholders should assess the project funding opportunities outlined in this plan to identify a pathway to project implementation. Various collaboration and joint venture opportunities have been identified that could be pursued. Stakeholders are encouraged to explore partnering with local organizations both involved and outside of this study to achieve project success.

6.1.2 Future Studies

There was initial interest in geothermal and wind energy projects but due to a lack of resource specific data these sources could not be verified and thus pursued. There were several accounts of the wind potential in eastern Alpine County but no tangible reports could be located. Several partners including Alpine County, Washoe Tribe and Heavenly would benefit from specific wind studies to determine the feasibility of wind turbine projects.

Similarly, a geothermal hot spring exists within the community of Meyers but no explorational drilling has been completed to determine its potential for energy capture. In addition, geothermal ground-loop systems are of an interest to stakeholders but further investigations into the potential use of these systems are required. An in-depth study of all geothermal resources in the study focus area should be pursued.

The study focus area, being a small, semi-isolated rural area would make a good place for a microgrid assessment. Microgrids offer resiliency over a geographic area during grid outage events, provide cost saving opportunities, and can deliver additional social benefits such as a reduced carbon footprint, and higher penetration levels of renewable resources than would otherwise be possible. Power resiliency is a topic of concern for many of the stakeholders involved in this study; microgrids could be a potential solution. A future microgrid assessment investment could address technical and economic issues to better enable stable microgrids that can potentially provide better and more reliable services to energy customers; while, at the same time, improve the stability of the larger grid.

6.1.3 Taking Projects to Next Phase

The projects developed in this study received preliminary engineering specifications/costs and a rough overview of environmental compliance. Additional planning grants could be pursued to develop detailed engineering specifications and design documents to make the project 'shovel ready'. Furthermore, implementation grants would allow for project costs related to permitting and CEQA/NEPA compliance.

GLOSSARY

Term	Definition
AB	Assembly Bill
ARFVTP	Alternative and Renewable Fuel and Vehicle Technology Program
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
BDT/yr	Bone Dry Tons per Year
CEQA	California Environmental Quality Act
CHP	Combined Heat and Power
City	City of South Lake Tahoe
CPUC	California Public Utilities Commission
CSI	California Solar Initiative
DOE	U.S. Department of Energy
DWR	California Department of Water Resources
EDCWA	El Dorado County Water Agency
Energy Commission	California Energy Commission
EPA	U.S. Environmental Protection Agency
EPIC	Electricity Program Investment Charge
EWWE	Energy, Water, and Waste Efficiency
GHG	California Greenhouse Gas
GID	General Improvement District
HAP	Hydro Advisory Panel
ITC	Investment Tax Credit
LTSC	Lake Tahoe Sustainability Collaborative
kW	kilowatt
LTUSD	Lake Tahoe Unified School District

MW	megawatt
NEPA	National Environmental Policy Act
PIER	Public Interest Energy Research
PHES	Pumped Hydroelectric Energy Storage
Proposition 39	California Clean Energy Jobs Act
RD&D	research, development, and demonstration
REAP	Rural Energy for America Program
ReMAT	Renewable Energy Market Adjusting Tariff
RES-BCT	Renewable Energy System, Bill Credit Transfer
RPS	Renewables Portfolio Standard
SAP	Strategic Action Plan
SB	Senate Bill
STPUD	South Tahoe Public Utility District
Study	Renewable Energy Regional Exploration Study
TKPOA	Tahoe Keys Property Owners Association
TTD	Tahoe Transportation District
TRPA	Tahoe Regional Planning Agency
USDA	U.S. Department of Agriculture
WaterSMART	Sustain and Manage America's Resources for Tomorrow

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APPENDIX A:

List of Planning Group Members

Table 1 Project Stakeholders

Organization	Contact Person
Alpine County	Mary Rawson
California Tahoe Conservancy	Tricia York
Heavenly Mountain Resort	Frank Papandrea
Lake Tahoe Community College	Jeff DeFranco
Lake Tahoe Unified School District	Steve Morales
Liberty Utilities	Tim Hutton
Lukins Brothers Water Co.	Jennifer Lukins
Markleeville Public Utility District	Richard Harvey
Markleeville Water Co.	Stephen Hibbs
Meyers Community Advisory Council	John Garafalos
South Tahoe Public Utility District	John Thiel
Tahoe Keys Property Owners Association	Daniel Moore
Tahoe Regional Planning Agency	Karin Edwards
Tahoe Transportation District	Alfred Knotts & Carl Hasty
U.S.D.A. Forest Service Lake Tahoe Basin Management Unit	Genevieve Villemaire
U.S.D.I. Bureau of Land Management	Colleen Sievers
Washoe Tribal Community	Tara Hess & Rob Beltramo

Table 2 EWWE Workgroup Member List

Member Name	Affiliation
Ben Stewart	Citizen
Donielle Morse	South Tahoe Public Utility District
David Long	Citizen
Emma Ingebretsen	
Erik Mason	Clipper Creek
Frank Papandrea	Heavenly Mountain Resort
John Thiel	South Tahoe Public Utility District
Juliana Prosperi	
Kathryn Obayashi-Bartsch	
Kevin Hill	
Madonna Dunbar	Tahoe Water Suppliers Association
Michael Ward	Private Consultant
Michelle Gartner	
Nicholas Martin	
Nicole Dorr	
Rebecca Bryson	Citizen
Rick Lind	Environmental Consultant
Scott Terrell	
Stallar Lufrano-Jardine	
Sten Seemann	Liberty Utilities Contractor
Tricia York	California Tahoe Conservancy

Strategic Action Plan Meeting Schedule

	Jan. 2015	Feb. 2015	Mar. 2015
Forum #1			
Forum #2			
Meeting			

APPENDIX B:

Brief Summary of Goals, Targets, Existing Laws, Regulations, and Policies

Table 1: Brief Summary of Goals and Targets

Tahoe Regional Planning Agency Regional Plan Update 2012
<p>Energy Goal E-1 is to promote energy conservation programs and development of alternative energy sources to lessen dependence on scarce and high-cost energy supplies through the following policies:</p> <ul style="list-style-type: none"> · E-1.1 Encourage recycling of waste products. Reusable waste products such as newspaper and aluminum cans should be targeted for recycling by providing a coordinated program of collection. · E-1.2. Development of alternative energy sources should be encouraged when such development is both technologically and environmentally feasible. A variety of techniques for providing alternative energy sources are both technologically and economically feasible. Environmentally acceptable techniques are encouraged. · E-1.3. Environmental impacts to the fishery, instream flows, and scenic quality of all proposed hydroelectric project sites shall be considered together with other environmental considerations. Dams and other water diversion facilities often impact the stream fishery. Project proposals must consider the impact on the resident and migratory fishery and adequately mitigate all significant adverse impacts. · E-1.4 Implement energy saving measures of the air quality sub element. These policies complement goals to improve the Region's air quality and to reduce local consumption of energy. <p>In addition, TRPA has GHG emission reduction strategies and draft ordinance language necessary to implement RPU EIS Mitigation Measure 3.5-1: Implement Sustainability Measures with Performance Standards. The proposed approach for implementation of the GHG emission reduction mitigation measure recognizes relevant existing programs and includes additional implementation measures. Relevant existing programs that would be incorporated by reference into the GHG reduction strategy include:</p> <ul style="list-style-type: none"> · Incorporate new green building standards - California Green Building Code and Nevada International Green Building Code · Existing State and federal requirements for public buildings · Require GHG reduction strategies in Area Plans · Advertise and promote existing incentive programs · Wood Stove Retrofit Rebate Program · Remove Barriers to green development
Lake Tahoe Sustainability Collaborative
<p>Vision: A global model for citizen-led regional sustainability.</p> <p>Mission: Sustain a citizen-based effort to accelerate a shift toward a healthier Tahoe-Truckee community, environment, and economy.</p> <p>The 2013 Sustainability Action Plan provides tools to assist local governments, agencies, businesses, residents, visitors, and community groups with prioritizing and adopting consistent sustainability actions throughout the Region. The Sustainability Action Plan represents an integrated approach to reducing GHG emissions and striving toward zero-impact in all aspects of sustainability. The document includes the revised GHG emissions inventory and reduction targets, and climate change and adaptation strategies vetted through the Lake Tahoe Sustainability Collaborative and the Tahoe Basin</p>

Partnership for Sustainable Communities.
Lake Tahoe Sustainable Communities Program
<p>Sustainability Action Plan Background identifies regional GHG reduction targets following California SB 375 (Sustainable Communities and Climate Protection Act), which calls for a reduction of 15% below 2005 levels by 2020. The Sustainability Action Plan will identify measures that can be pursued to attain this level of reduction by 2020. Initial strategies include:</p> <ul style="list-style-type: none"> · Policies that support and encourage investor owned utilities to provide energy from renewable sources · Policies that limit the aggregate level of GHG emissions · Require new buildings in the Region to be more energy efficient · Retrofit existing buildings to be more energy efficient · Local, decentralized energy generation
Tahoe Prosperity Center, Lake Tahoe Basin Prosperity Plan 2010
<p>Vision Statement - The Lake Tahoe Basin is a world class center of innovation around green tourism, green building and sustainable design, scientific research and applications for environmental resource renewal and management, renewable energies, and health and wellness. "It is the sustainability powerhouse of the nation."</p>
Forest Service Strategic Energy Framework (January 2011)
<p>Goal: to significantly contribute to national energy security, environmental quality, and economic opportunities through sustainable land management, energy production, and conservation. The Agency's goal for energy efficiency is to become an energy neutral Agency by 2020; 25% by 2012; 50% by 2016; and 100% by 2020 (USFS website 2013 http://www.fs.fed.us/sustainableoperations/focus-area-energy.shtml).</p>
CA State Parks, Strategic Action Plan (March 2013)
<p>Explore renewable and/or alternative energy options that would meet park needs and reduce long-term energy costs http://www.parks.ca.gov/pages/23071/files/2013-2014_california_state_parks_strategic_action_plan_3-8-13.pdf</p>
U.S. Department of the Interior, BLM
<p>Working with local communities, state regulators, industry, and other federal agencies in building a clean energy future by providing sites for environmentally sound development of renewable energy on public lands. Renewable energy projects on BLM-managed lands include wind, solar, geothermal, and biomass projects and the siting of transmission facilities needed to deliver this power to the consumer. (BLM website, 2013 http://www.blm.gov/wo/st/en/prog/energy/renewable_energy.html)</p>
El Dorado County Hydro Advisory Panel (HAP)
<p>Recommended that, consistent with State and Federal policies, El Dorado County adopt a policy to encourage independence from foreign oil. The following language has been developed through HAP and purveyor meetings on this study to help meet this policy goal: "It is the policy of the (stated agency) that resources planning and infrastructure, including water and wastewater systems, emphasize renewable energy and energy efficiency toward a goal of Energy Independence for El Dorado County and its citizens."</p>
Renewable Energy Regional Exploration Study
<p>Through collaborative efforts between Partners, develop a Renewable Energy and Strategic Action Plan that meets California and regional adopted policies, targets, and timelines to become more energy efficient and secure and reduce carbon emissions, while maintaining and enhancing overall environmental quality, sustainability, and economic opportunities.</p>

Table 2: Brief Summary of Existing Laws, Regulations, and Policies

AB 1969 - Renewable Portfolio Standards
<p>Requires electrical corporations to file a tariff for purchasing renewable energy from water/wastewater agencies</p> <ul style="list-style-type: none"> · Directed the CPUC to establish market price at which renewable energy would be purchased · CPUC February 2008 Resolution E-4137 set FITs for investor-owned utilities (e.g., PG&E) · CPUC FIT requires PG&E to purchase/interconnect qualifying facility power under standardized contracts · PG&E tariff rates range from \$0.06 to \$0.18/kWh for 2008 based on season and time of day · FITs are adjusted annually and rates are guaranteed for the term of the 10-, 15- or 20-year contract
California AB 32 Global Warming Solutions Act of 2006
<p>Establishes economy-wide cap on GHG emissions at 1990 levels by 2020</p> <ul style="list-style-type: none"> · represents an 11 percent reduction from current levels, which doesn't account for growth · CARB is the lead agency for implementing AB 32 requirements to achieve a "clean-energy economy" · CARB "must develop a Scoping Plan to lower GHG emissions to reach the 2020 limit" · Mandatory GHG reduction measures are being developed for each sector of the economy, including water · CARB proposes 6 GHG measures for the water sector. Four are directly applicable to El Dorado County: <ul style="list-style-type: none"> > water use efficiency, > water recycling, > water system energy efficiency, and > renewable energy production at water and wastewater facilities · CARB proposes a "Public Goods Charge" of \$10 to \$50 per water connection to fund GHG measures · CARB proposes to expand RPS requirements from 20 percent by 2010 to 33 percent by 2020
California SB 1368 Emission Performance Standards
<ul style="list-style-type: none"> · Prohibits an electricity provider from entering into long-term contracts unless the generation complies with emission standards - regardless of facility location · Rule is in place with no phase-in · Also impacts existing generation facilities - capital investments in non-complying existing facilities are limited to routine maintenance
Exec. Order S-3-05 - Governor directive to reduce California GHG emissions to 80 percent below 1990 levels by 2050
Governor's Clean Energy Jobs Program (12,000 MW of Distributed – i.e., 'Customer Side' aka 'Behind the Meter' – Renewable Energy Generation by 2020)
<p>Governor Brown's Clean Energy Jobs Plan sets a goal of 20,000 new MW of renewable energy by 2020 (Office of Governor 2011). Of this, 12,000 MW are to come from distributed (local) renewable energy generation from smaller systems of up to 20 MW capacity. The Office of Planning and Research (OPR) indicates that local renewable energy generation has the greatest value for the electric system when it is located in areas where capacity to meet existing electricity demand is constrained (OPR 2011).</p>
California Energy Commission Integrated Energy Policy Report
<p>The Energy Commission conducts assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The results of these assessments are provided in the Integrated Energy Policy Report (IEPR). The Energy Commission</p>

<p>adopts an (IEPR) every two years and an update every other year (CEC 2013a).</p> <p>In the 2011 IEPR proceeding, the Energy Commission evaluated its method of analyzing and estimating future generation costs, and for the 2013 IEPR used the refined methods to prepare updated estimates of generation costs from a developer's perspective for new generation. Solar photovoltaic technologies are expected to continue a rapid decline in costs, while solar thermal technologies are expected to see cost reductions as improvements are made by developers and manufacturers (CEC 2013a).</p>
<p>AB 1014 and SB 43 - Renewable Energy Self-Generation Program</p> <p>This 2013 program, introduced by Williams, would allow homeowners and business owners who are not able to use solar panels, to participate in an optional program that would allow them to access renewable energy while receiving a credit on their energy costs. Part of the intent for this program is to further the Governor's Clean Energy Jobs Plan. AB 1014 passed in the House and was referred to the Committee on Rules on June 13, 2013. SB 43 was approved and chaptered on September 28, 2013 (Leginfo 2014).</p>
<p>SOLAR</p>
<p>California AB 3250 Solar Rights Act 1978</p> <p>The Solar Rights Act sought to promote and encourage the widespread use of solar energy and to "protect and facilitate adequate access to the sunlight which is necessary to operate solar energy systems." Even though the law is more than 30 years old, the Solar Rights Act contributes significantly to California's strong policy commitment to solar energy, and the policy rationale for the Act is relevant today and continues to support California's solar energy policy initiatives.</p> <ul style="list-style-type: none"> · Balances the needs of individual solar energy system owners with other property owners by developing solar access rights. · Limits the ability of covenants, conditions, and restrictions, typically enforced by homeowner associations (HOA), and local governments to restrict solar installations. · Creates the legal right to a solar easement and requires local governments to preserve passive cooling and heating opportunities to the extent feasible in new development projects.
<p>Federal Business Energy Investment Tax Credit (ITC)</p> <p>The federal business energy investment tax credit available under 26 USC § 48 was expanded significantly by the Energy Improvement and Extension Act of 2008 (H.R. 1424), enacted in October 2008. This law extended the duration -- by eight years -- of the existing credits for solar energy, fuel cells and microturbines; increased the credit amount for fuel cells; established new credits for small wind-energy systems, geothermal heat pumps, and combined heat and power (CHP) systems; allowed utilities to use the credits; and allowed taxpayers to take the credit against the alternative minimum tax (AMT), subject to certain limitations. The credit was further expanded by the American Recovery and Reinvestment Act of 2009, enacted in February 2009.</p> <p>Solar ITC: The credit is equal to 30% of expenditures, with no maximum credit. Eligible solar energy property includes equipment that uses solar energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat. Hybrid solar lighting systems, which use solar energy to illuminate the inside of a structure using fiber-optic distributed sunlight, are eligible. Passive solar systems and solar pool-heating systems are <i>not</i> eligible. <i>The credit for equipment that uses solar energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat will decrease from 30% to 10% after December 31, 2016 (DSIRE 2014).</i></p>

California Solar Initiative (CSI)
<p>The California Solar Initiative (CSI) is the solar rebate program for California consumers that are customers of the primary investor-owned utilities - Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric (SDG&E). The largest component of the CSI Program is known as the CSI General Market Program. Through the CSI General Market Program, consumers can earn cash rebates for every watt of solar energy installed on homes, businesses, farms, schools, and government and non-profit organization buildings (Go Solar 2014a).</p> <p>The CSI General Market Program funds solar PV as well as other solar thermal generating technologies (Go Solar 2014b). The General Market Program aims to install 1,750 MW of rooftop solar energy with an incentive budget initially set at \$1.75 billion under Decision 06-12-033, and later increased to \$1.95 billion under Decision 11-12-019 (Go Solar 2014a).</p>
WIND
California AB 1207 - Small Wind Energy Systems 2001
<p>To promote small wind turbine installations by standardizing permitting requirements.</p> <ul style="list-style-type: none"> · Allows counties and other local agencies to follow their own processes for permitting and enforce compatibility and use issues · Limits the restrictions that may be imposed on tower height, notification, setbacks, noise level, turbine approval, tower drawings, and engineering analysis.
El Dorado County Ordinance No. 4954 – Wind Energy Conversion Systems 2010
<p>To Comply with California Government Code Section 65893 which encourages local agencies to adopt zoning standards that enable construction of small wind energy conversion systems (WECS) for on-site, home, farm and commercial use.</p> <ul style="list-style-type: none"> · Outlines County specific permit requirements · Specifies number of WECS Units · Applicable development standards · Application submittal requirements
HYDROELECTRIC
CEQA Guidelines Section 15328 - Small Hydroelectric Categorical Exemption
<ul style="list-style-type: none"> · Exemption applies to projects of 5 MW or less capacity at existing facilities · Projects cannot affect instream flows or special status species
Federal Energy Regulatory Commission Small Hydro (at existing dam) and "In-Conduit" Exemptions
<ul style="list-style-type: none"> · Small hydro includes qualifying facilities up to 5 MW at existing dam or utilizing a natural water feature · In-conduit includes qualifying facilities not on federal lands up to 40 MW that are constructed on an existing conduit
The Hydropower Regulatory Efficiency Act of 2013
<p>On August 9, 2013, the Hydropower Regulatory Efficiency Act was signed into law. FERC notes that hydropower is the largest source of clean, renewable electricity in the United States, and provides nearly 7 percent of the nation's electricity and about 100,000 MW of the nation's electric capacity. In section 2 of the act, Congress finds that there is substantial potential for adding hydropower generation to non-powered dams, since only 3 percent of the 80,000 dams in the United States generate electricity (FERC 2013).</p> <ul style="list-style-type: none"> · The act affects hydropower development in four ways: · For projects at existing dams that qualify for a small hydropower exemption, the act increases the maximum allowable capacity for such projects from 5 MW to 10 MW.

<ul style="list-style-type: none"> · The act provides that conduit hydropower facilities with an installed capacity that does not exceed 5 MW and that meet the act's other qualifying criteria are not required to be licensed under the Federal Power Act. It also increases the maximum installed capacity from 15 MW to 40 MW for a privately developed hydropower facility that qualifies for a conduit exemption. Previously, the 40-MW maximum was available only to municipal projects. · The act provides the Commission with the authority to extend preliminary permits for up to 2 additional years beyond the 3 years previously allowed under the Federal Power Act. · Lastly, the act requires FERC to investigate the feasibility of a 2-year licensing process for hydropower development at non-powered dams and closed-loop pumped storage projects (FERC 2013).
The Bureau of Reclamation Small Conduit Hydropower Development and Rural Jobs Act
<p>The Bureau of Reclamation Small Conduit Hydropower Development and Rural Jobs Act (H.R. 678 Tipton) was signed into law on August 9, 2013. The act is designed to create new American jobs and expand production of clean, renewable hydropower. Because hydropower is one of the cheapest and cleanest forms of electricity, expanding development will help lower energy costs for American families and small businesses while protecting the environment. The bill authorizes hydropower development, streamlines the regulatory process, and reduces administrative costs for small canal and pipeline hydropower development projects (CNR 2013).</p> <p>New hydropower development would only take place on existing Bureau of Reclamation canals and pipes. Such man-made facilities are already on disturbed ground, have no environmental impact and have already gone through environmental review. This legislation could help facilitate hydropower development in at least 373 of the federal agency's canals and pipelines, as identified in a Bureau of Reclamation March 2012 report (CNR 2013).</p> <p>The non-partisan Congressional Budget Office estimates the bill will generate federal revenue over 10 years through increased hydropower production at no expense to American taxpayers. Additionally, the bill protects water users by reaffirming supply and delivery as the first priority, and it ensures that there will be no financial or operational impacts to existing water and power users (CNR 2013).</p>
ALTERNATIVE TRANSPORTATION
Public Law 110-140 Energy Independence and Security Act of 2007
<ul style="list-style-type: none"> · Establishes a grant program for public agency projects that encourage the use of plug-in electric vehicles · Requires new automobile rating for consumers to compare fuel economy and GHG emissions at purchase
Executive Order B-16-2012 Zero-Emission Vehicles
<p>Directs state government to help significantly expand the market for Zero-emission Vehicles (ZEVs) and encourages the development and success of ZEVs to protect the environment, stimulate economic growth and improve the quality of life in the State. The Executive Order established several milestones:</p> <ul style="list-style-type: none"> · By 2015: The state's major metropolitan areas will be able to accommodate ZEVs through infrastructure plans and streamlined permitting; private investment and manufacturing in the ZEV sector will be growing, and the state's academic and research institutions will contribute to ZEV market expansion by building understanding of how ZEVs are used. · By 2020: The State's ZEV infrastructure will be able to support up to one million vehicles; the costs of ZEVs will be competitive with conventional combustion vehicles; ZEVs will be accessible to mainstream consumers; and there will be widespread use of ZEVs for public transportation and freight transport.

- By 2025: Over 1.5 million ZEVs will be on California roadways and their market share will be expanding; Californians will have easy access to ZEV infrastructure; the ZEV industry will be a strong and sustainable part of California's economy; and California's clean, efficient ZEVs will annually displace at least 1.5 billion gallons of petroleum fuels.
- By 2050: Reduce transportation-related greenhouse gas emission by 80 percent below 1990 levels.